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CENTRAL INTELLIGENCE AGENCY  
**INFORMATION REPORT**

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<b>COUNTRY</b>	East Germany	<b>REPORT</b>	
<b>SUBJECT</b>	Research Activities at the Physics Institutes of the Friedrich Schiller University, Jena	<b>DATE DISTR.</b>	31 March 1955
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50X1-HUM

THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.  
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50X1-HUM

1. No research tasks in the sphere of physics are allocated to the institutes of the Friedrich-Schiller University in Jena by any body outside the University itself. The directors of the various institutes are free to choose the themes to be worked on and to determine the method of work. The total funds available for the physics institutes amount to only 50,000 DME per year, including wages of personnel and cost of materials.<sup>1</sup>
2. The Physics Institute under Professor Dr. Wilhelm Schuetz concentrates on molecular physics and, in particular, on research into the following:
  - a. The resonance of molecules; as of December 1954, this work was restricted to ammonia molecules.
  - b. The red and infrared range; research consists of the building of a replica of an American Boley (phonetic spelling) cell infrared receiver; infrared reception is also carried out with normal type bolometers and radiometers.
  - c. Microwave spectroscopy and wavelengths of less than 3 centimeters in the microwave range; this work is subject to considerable difficulties because tubes for these short wavelengths are not available in East Germany. The klystrons produced by VEB Funkwerk Erfurt will only operate down to 3 cm and that factory's attempts to make tubes for shorter wavelengths have so far failed. Accordingly, the Institute has to resort to frequency doubling and tripling by using silicon rectifiers, so that work may be carried out at a wavelength of 1.5 cm with a minimum power supply. This is still in the early stages and useful results cannot be expected for some time.
  - d. Nuclear induction, i.e. the magnetic moments of nuclei; this includes determination of magnetic moments by the use of water, in accordance with the methods of the American Purcell.
  - e. The behavior of semiconductors.
  - f. The electrostatic atomization of liquids.

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50X1-HUM

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50X1-HUM

S-E-C-R-E-T

- 2 -

3. The Technical Physics Institute under Professor Dr. Alfred Eckardt concerns itself with nuclear, but not directly with atomic, physics. It specializes in the production of good Geiger counter tubes with high sensitivity and, above all, of the smallest possible betatrons. Dipl. Phys. Hentze (fnu), at present working for his doctorate, has built a betatron for about 3,000,000 electron-volts. It has a diameter of only about 30 cms; the principle is the normal betatron principle whereby ions are periodically injected at a frequency of 8,000 mcs. into a pulsating magnetic field of the same frequency and they can then be accelerated in a relatively accurately-controlled path until the electron voltage reaches 3,000,000.
4. There is some cooperation between the University and the firm of Schott und Genossen in Jena because some of those preparing work for their diplomas in the University work in the Schott und Genossen laboratories. The most important recent development is the production of the so-called Selborglas. This is a normal glass which has been submitted to a process of purification, so that only a quartz skeleton remains. This quartz skeleton, which has a porous appearance and the characteristic properties of a filter, consists of quartz particles of a diameter of  $10^{-5}$  m. This skeleton is then impregnated with iodine and other solutions; when heated to a temperature of about  $1000^{\circ}$  C (the melting point of quartz being  $1800^{\circ}$  C), the skeleton begins to fuse and incorporate whatever material it then contains, and it finally appears completely transparent and tinted with whatever color has been applied (compare the borax bead test for inorganic radicals). This glass is almost as insensitive to heat as ordinary quartz glass and its expansion coefficient is about  $10^{-6}^{\circ}$  C.
5. The Research Institute for Magnetic Materials under Dr. A. Mager does not belong to the University but to the Academy of Sciences, whence it receives its research tasks. Research is being carried on there on iron carbonyls (produced in Jena) for improving the tapes of tape-recorders.

1.  Comment. This figure seems absurdly small

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